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## CENTRAL INTELLIGENCE AGENCY



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50X1-HUM

COUNTRY USSR (Kharkov and Rostov Oblast)

REPORT

SUBJECT 1. Locomotive Repair Plant in Izyum
2. Novocherkassk Electric Locomotive Works

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Two reports concerning locomotive plants in the USSR

Attachment 1 deals with the locomotive repair plant at Izyum and is limited to information on the over-all plant functions, two shops, and some plant personnel. Plant security and working conditions are briefly covered.

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Attachment 2 is a rather detailed report dealing with the Novocherkassk electric locomotive works. The report contains a general description of the plant, production figures, information on water and power supply, raw materials, and manufacturing processes, and three sketches, two of them annotated.

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## LOCOMOTIVE REPAIR PLANT IN IZYUM

1. The Locomotive Repair Plant was located approximately 200 meters from the railroad station in the city of Izyum (N 49-12, E 37-16). It was connected to the railroad station by four sidings and a foot path. The plant was surrounded by a three-meter-high wooden fence with two entrances. There were no underground installations or recently constructed buildings in the plant. The plant did not have a numerical designation, nor did it repair military equipment.

2. The principal functions of the plant were the repairing of locomotives and the manufacture of the following machines and small parts:

   a. Milling machines.
   b. Automatic compressed-air power hammers.
   c. Screws and belts. These were manufactured in three sizes: 60 x 20 millimeters, 70 x 7 millimeters, and 200 x 40 millimeters.
   d. Drill bits. These were produced in sizes varying from 60 x 5 millimeters to 200 x 40 millimeters.

3. [redacted] information about only two shops: the repair and assembly shop and the spare parts shop: 50X1-HUM

   a. Repair and assembly shop. This was a one-story 60 x 40 x 5-meter fireproof brick structure with a skylighted metal roof. It did not contain a basement. This shop was divided into two sections. The first section was in charge of assembling and testing the machinery. The second section was in charge of repairing and lubricating damaged locomotives. [redacted] 50X1-HUM

   b. Spare parts shop. This was a one-story 150 x 50 x 5-meter fireproof brick structure with a skylighted metal roof. There was no basement in the building. This shop manufactured drill bits and screws and belts which were used in spare parts for locomotives. Six lathes of different caliber and two milling machines of unknown make were located in this shop. Approximately sixty workers were employed here. The norm for this shop was forty drill bits per day. [redacted] 50X1-HUM [redacted] no

4. Supplies and transportation. Such items as three meter by 20 to 80-millimeter steel ingots of various hardnesses, locomotive wheels, pipe, lubricating grease and oil, axles, and tie rods were shipped to the plant by rail. The four plant sidings were connected to the Izyum-Rostov railroad line. Trains arrived at the plant every other day at the unspecified hour. [redacted] The plant made no use of highway or water transportation. 50X1-HUM

5. Working conditions at the plant were described as follows: the plant worked one eight-hour shift a day (except for the security guards, see below), Monday through Saturday from 0800 to 1600 hours with three quarters of an hour for lunch at noon. Employees were entitled to 12-day summer

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vacations. A lathe operator earned from 700 to 800 rubles a month. Workers were paid on a piecework basis. Sanitary conditions in the plant were fair. A clinic was available for emergency cases. Sick workers were taken to hospitals and sanitariums in Izyum and sometimes to Kharkov.

6. Plant security. The plant employed 20 blue-uniformed, armed guards who worked three shifts. Two or three guards controlled the personnel entrances, and three or four guards were posted outside the plant. Each worker had to present a metal tag (which showed his number and photograph) to the entrance guard and then to the timekeeper. These tags were hung on a board, according to their numerical order, in the shop. The workers picked up their tags again as they left the shop. Workers were not permitted to enter shops other than their own. The plant had a fire brigade 50X1-HUM There were no anti-aircraft attack precautions.

7. Personnel organization was described as follows: each shop had a small personnel administration department which took care of the shop payroll and saw to it that the norms were fulfilled. The shops were subordinate to the main administrative office which was headed by the plant director and the shop chiefs. The spare parts shop, was directed 50X1-HUM by a shop chief who was an engineer and a master (in charge of production control). 50X1-HUM The shops were generally organized as follows: one master, seven lathe operators, eight fitters, four control chiefs, two timekeepers, three women who were in charge of the tool supply, one tool supply supervisor, five iron workers, ten office clerks, and one chief engineer. 50X1-HUM the names of the following Soviet personnel:

Ivanov (fnu), Plant director.

Nikolaevich (fnu), spare parts shop chief.

Ivanov (fnu), Master.

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## NOVOCHERKASSK ELECTRIC LOCOMOTIVE WORKS

### Location and General Description

1. The Novocherkassk Electric Locomotive Works was located five kilometers northeast of Novocherkassk (N 47-15, E 40-15); this plant was sometimes referred to as the Budenny, S.M. 50X1-HUM [redacted] It was subordinate to the Ministry of Electric Power Stations. A streetcar line connected the city of Novocherkassk with the plant, and the Moscow railroad line passed by 100 meters from the plant. [redacted] The plant area was rectangular in shape and located on a flat terrain. Some buildings, believed to be living quarters for plant personnel, were located outside the rectangular 1000-meters-long by 600-meters-wide part-brick, part-wood 2.50 meters tall fence which surrounded the plant perimeter. The plant had two employee entrances and a railroad siding entrance. The main axis of this plant ran north and south. No secret sections or underground installations existed in this plant. A new building was under construction for the assembly shop and another was in the planning stage for the steel casting shop. See [redacted] sketch No. 1 of plant layout on page 7 . 50X1-HUM 50X1-HUM 50X1-HUM

### Electric-locomotive Production

2. This plant constructed electric locomotives. As they were made up of so many parts [redacted] The large locomotives weighed approximately 200 tons and were painted green and blue. These locomotives were used to haul passenger trains although they were made to haul freight trains. The small sized locomotives were used in plants and sea and river ports. The brand was NEZ, series 22, and VAU, series 22. This plant did not construct or repair military equipment. Parts were shipped by rail to the Caucasus and the Urals and other unidentified destinations. 50X1-HUM

### Shop No. 2 - Steel Casting Shop

3. [redacted] sketch No. 2 of shop No. 2 layout on page 8 .) This shop was constructed in an F-shape and measured 100 x 100 meters. It contained two projections which measured 20 x 15 meters and 12 x 8 meters respectively. This was a fireproof structure with a sheet metal roof and skylights. A two-story section was devoted to office space. This shop produced steel castings for parts used in electric locomotives. These parts ranged in size from 0.100 kilograms to 3 metric tons. (See [redacted] sketch No. 3 of parts produced in this plant on page 10.) This shop also produced parts for its own machinery. Most of the plant's machinery was of German and Soviet make, but some was of [redacted] and [redacted] make. In the steel casting shop [redacted] brand Nos. 10,000 and 3,000 pre-war molding machines in good condition were used. A special brigade worked on Sundays on the machine maintenance. This shop was the largest shop in the plant and produced about 500 parts daily. Approximately 500 persons, (300 specialists and 200 laborers) were employed here. 50X1-HUM 50X1-HUM 50X1-HUM 50X1-HUM

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**Raw Materials**

4. Scrap iron from the Urals, was delivered to the foundry and cast into ten-kilogram ingots. Paint, coal, coke from the Urals, poor quality sand from nearby areas, and special sand from unidentified regions were brought to the plant. Approximately a two-month supply of raw material was kept on hand at all times in the plant warehouses. 50X1-HUM

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**Power and Water Supply**

5. Electric power was received from nearby (not further identified) electric power stations. The plant was equipped with transformers. Electric power was used for the electric arc furnaces and tempering furnaces. The 127 and 220-volt electricity was adequate for ordinary use. 50X1-HUM some machines and furnaces must have required very high voltage but he did not offer further information on this particular. 50X1-HUM

**Transportation**

6. The plant siding connected with the Rostov-Moscow railroad line which passed through Novocherkassk. The siding branched off in the direction of various shops within the plant enclosure. Straight sections of track, used for testing locomotives, were located opposite the assembly shop. Wooden railroad cars, most of which were old, were unloaded on the station platform by means of cranes. Most cars had two axles; some had four. Battery-powered platform cars and mobile cranes were used to carry material from one shop to another within the plant. A street led from the plant to the six-meter wide, asphalt highway. The highway had a good drainage system and was in good condition. The plant owned an undetermined number of three and five-ton trucks as well as three or four buses. The vehicles were housed in a garage which contained a small repair shop. No river transportation was used. 50X1-HUM

**Storage**

7. Besides the main plant warehouse, each shop contained its own warehouse. Storage dumps were located at various points within the plant enclosure.

**Manufacturing Process** 50X1-HUM

8. the manufacturing process : The sand-mixing process was first. The metal was then melted down in electric furnaces. Raw materials were submitted to temperatures of 1,500 degrees centigrade and the steel was produced by electric fusion. The metal was then chemically tap-tested. Patterns were prepared and the steel was cast into the molds. Parts were manufactured in the various machine shops and then cleaned and checked. A few automatic control devices were available but most shops did not have them. 50X1-HUM

**Production Figures**

9. During 1955, a total of from 20 to 30 large and small locomotives were manufactured. four to five percent of the large parts produced each month were defective. An effort was being made to reduce this figure to two percent. Constant efforts were made to increase production. 50X1-HUM

**Working Conditions**

10. The plant worked a six-day work-week. The work-day was divided into two eight-hour shifts and one seven-hour shift, as follows:

a. First shift: 0730 to 1630 hours with a one hour rest period.
b. Second shift: 1630 to 0030 hours with a half-hour rest period.
c. Third shift: 0030 to 0730 hours except Sundays.

The plant worked a six-hour day on Saturdays and on days preceding holidays. Workers under eighteen years of age worked a six-hour day every day. Vacations ranged from twelve to 24 days per year, according to the type of work engaged in. In addition to Sundays, there were about seven national holidays each year. [redacted] salary of 930 rubles a month, and [redacted] a 200-ruble bonus when the production plan was completed. Sanitary conditions were good. 50X1-HUM 50X1-HUM

**Security and Fire Precautions** 50X1-HUM

11. [redacted] the security and fire precautions [redacted]: an armed guard was posted outside the plant, [redacted] To enter the plant a worker had to show a document bearing his name, photograph, and the name of his shop. Special identification cards were issued to those temporarily assigned to the plant for training or other purposes. The plant had its own fire brigade and each shop was equipped with basic fire-fighting equipment such as hand fire-extinguishers, sand bags, water pumps, and hoses. All employees were instructed in fire prevention methods. 50X1-HUM 50X1-HUM

**Personnel**

12. From 2500 to 3000 employees worked at the plant. The personnel was organized as follows: Director (named Petrov), deputy directors, a personnel manager, and the heads of the following sections: technical-economy, metallurgy, construction, machine shop, electric shop, supply section, administrative office, payroll, coordination and work planning, and the testing section. [redacted] 50X1-HUM

**Future Production Plans**

13. [redacted] plans were being made to increase the then-current production yield two or three times. He did not know whether this plan had ever been put into effect. New shops, production methods, and automation were also being planned. [redacted] plants of this type could easily be converted to military use. 50X1-HUM 50X1-HUM

**Legend to Sketch No. 1 of Novocherkassk Electric Locomotive Works** 50X1-HUM

1. Cast iron shop.
2. Steel stock.
3. Wood and metal molds shop.
4. Forge.
5. Paint shop.
6. Sheet metal shop.
7. Machine shop.

7 (bis) Assembly shop.

8. Insulation and machine shop.
9. Heating plant.
10. Compressors and electricians' shop.
11. Galvanizing shop.
12. Machine tool repair shop.
13. Transformers.
14. Garage.
15. Construction shops.
16. Personnel offices.
17. Fire squad.
18. Entrance.

**Legend to [redacted] Sketch No. 2 of Steel Casting Shop** 50X1-HUM

Two floors:

a. The lower floor housed the machine-testing shop, the laboratory for experimentation of the sand-mixing process, and a supplementary machine shop. Approximately 500 persons worked here.

b. Upper floor housed the dining room and offices.

1. Dining room and offices.
2. Mobile first-aid unit.
3. Chemical laboratory.
4. Pattern warehouse.
5. Manufacture of special bolts used in the construction of locomotives.
6. Raw material warehouse.
7. Mold shop.
8. Shop where parts were cleaned.
9. Annealing furnace.
10. Steel casting shop.
11. Chemical laboratory.
12. Electric furnaces.
13. Sand dumps.
14. Sand-mixing shop.
15. Railroad siding.

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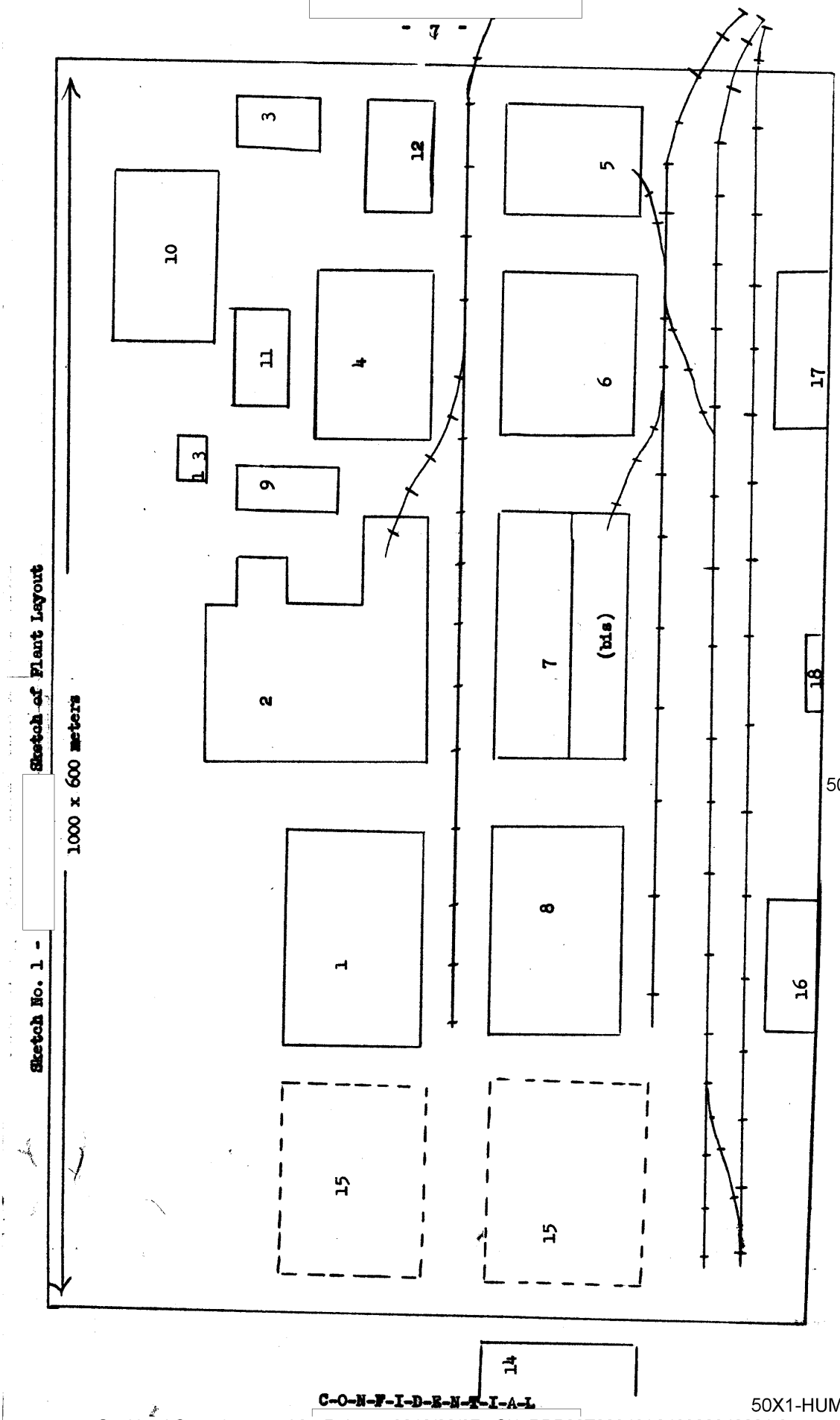


Sketch No. 1 -

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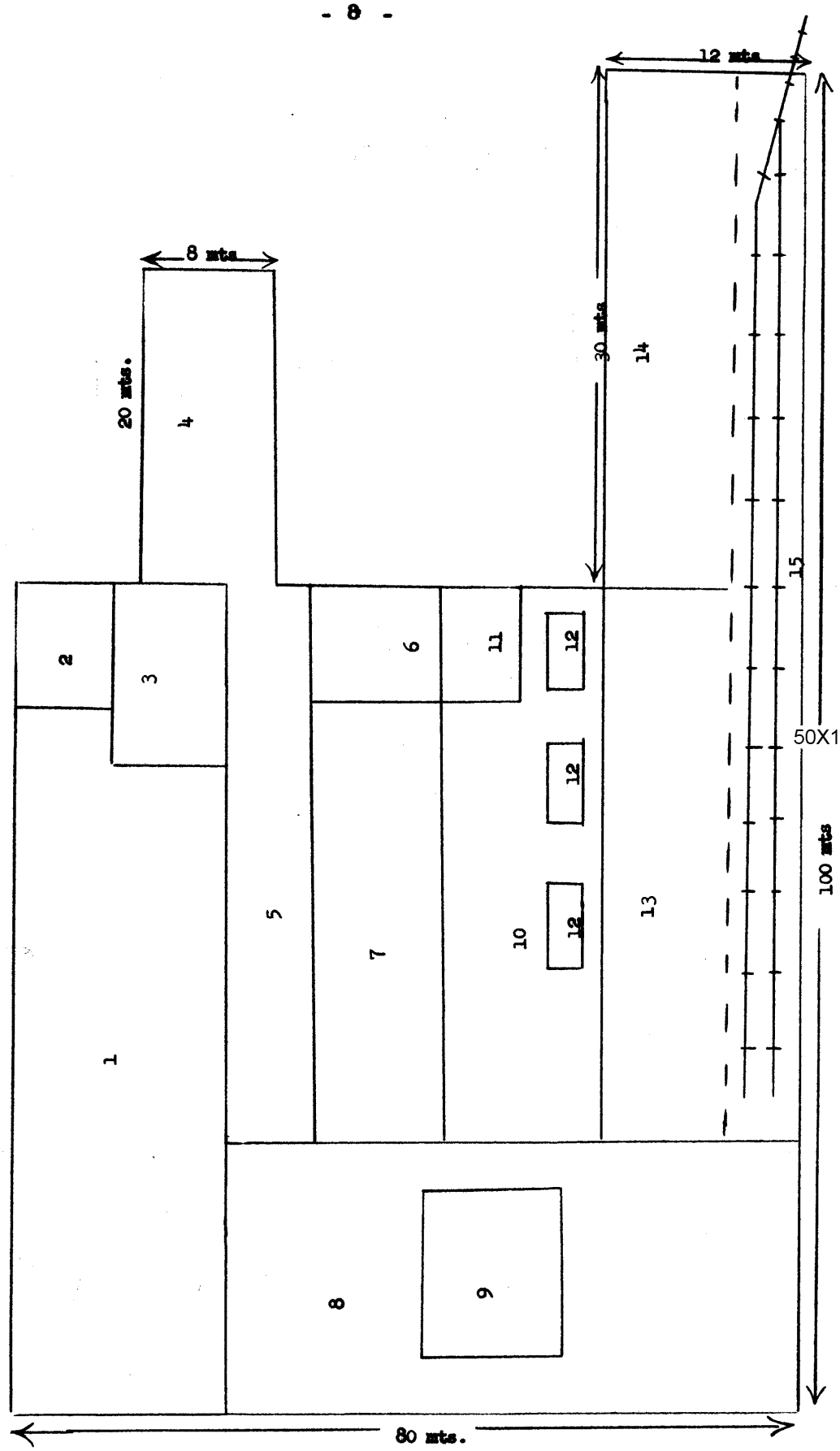
Sketch No. 2 -- Sketch of Steel Casting Shop

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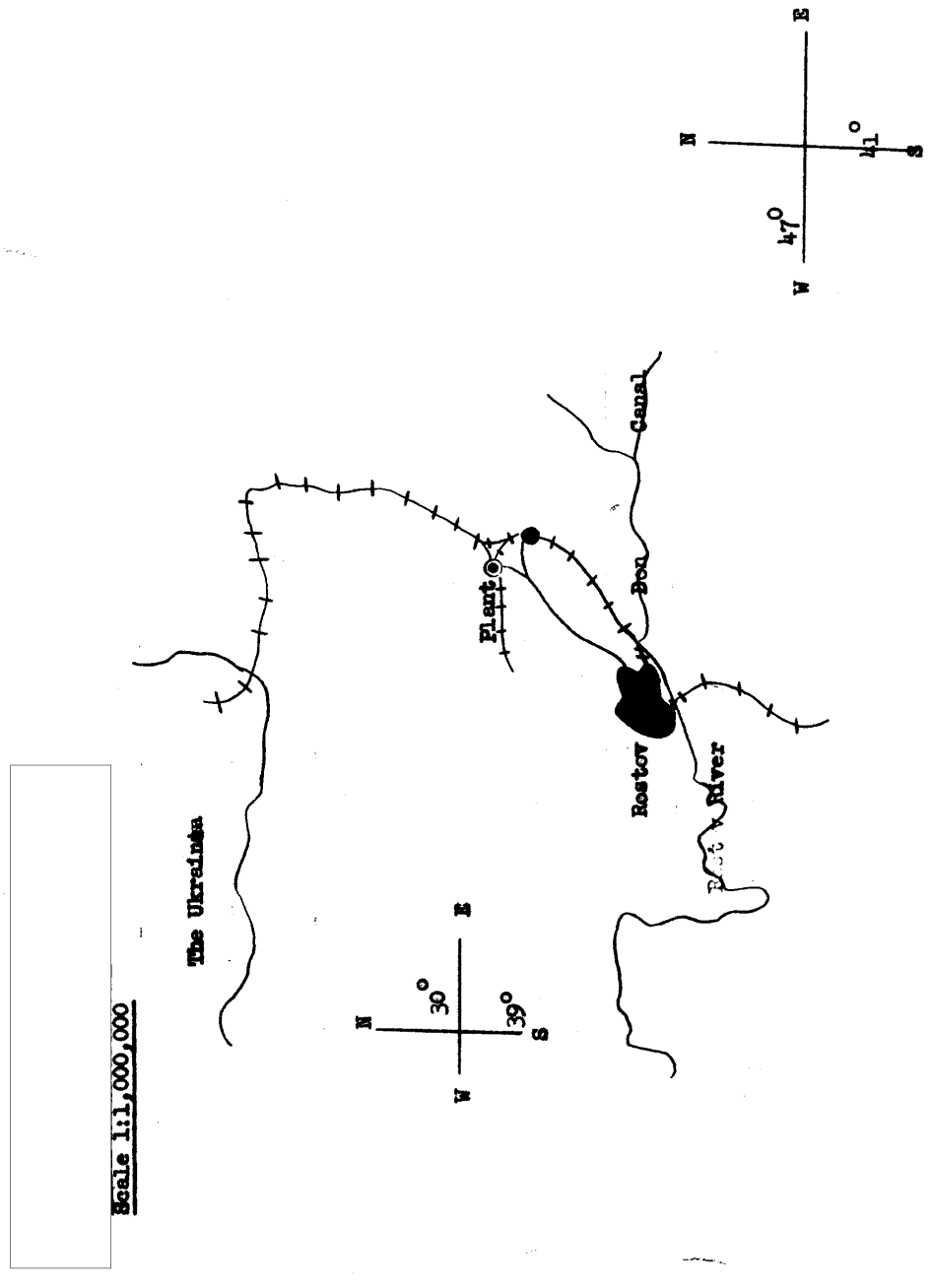


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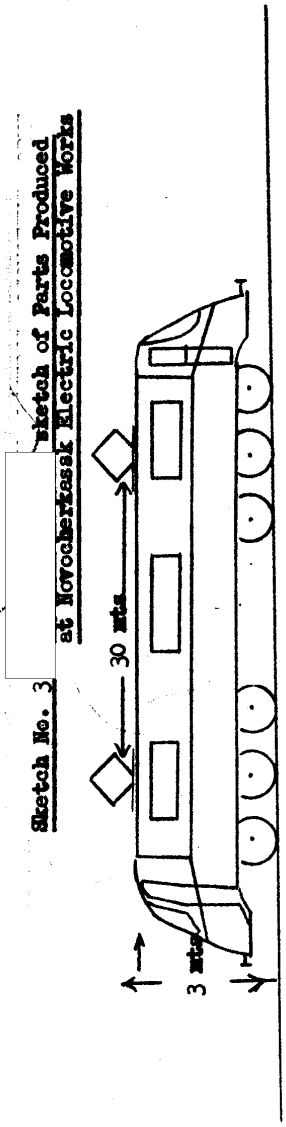
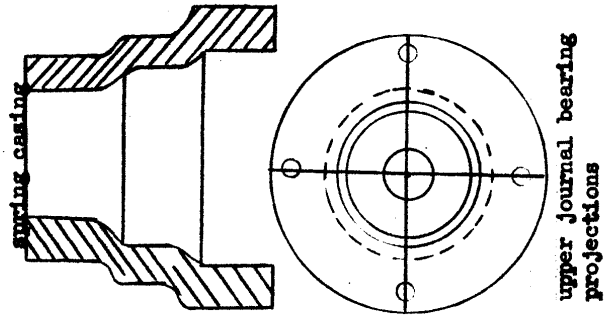
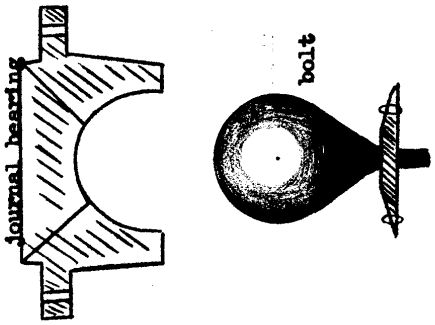
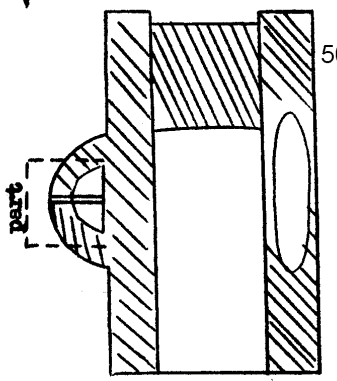
Sketch No. 3

Sketch of Parts Produced at Novocherkassk Electric Locomotive Works

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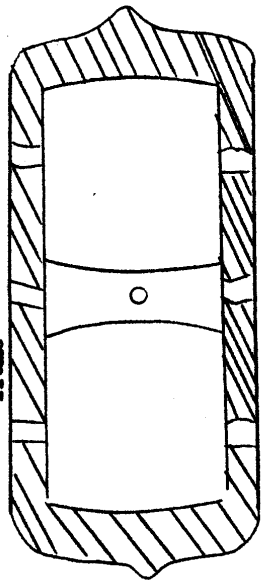


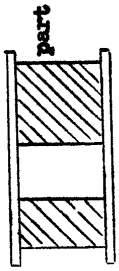


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